

## Section IV

### Special VA Program Projections

#### *Introduction and Background*

The majority of services projected by the FY04 VA Enrollee Health Care Projection Model are based on a combination of private sector utilization and historical VA utilization. However, the programs included in the Special VA Program analysis do not have credible private sector benchmarks, as these are rarely covered by commercial benefit plans. For this reason, these programs are projected without reference to private sector benchmarks. A separate analysis, using the same general modeling methodology as that used for private sector benefits, was developed for Special VA Programs. This analysis was used for all programs, with minor variations for each program.

The unique VA programs that are modeled in this analysis, for which robust private sector benchmarks are not available, include the following programs:

#### Outpatient Mental Health VA Programs

Day Treatment	505, 553, 581
Homeless	522, 529, 590
Methadone Treatment	523
Mental Health Intensive Case Management (MHICM)	552
Work Therapy	535, 573, 574, 575
Community Mental Health Residential Care	503, 121

#### Clinic Stops

#### Special VA Program Bed Section Care

Blind Rehab (VA Model)	21, 36
Spinal Cord Injury (VA Model)	22, 23
Sustained Treatment and Rehab (STAR I, II, & III)	89, 90
Psychiatric Residential Rehab Treatment Program (PRRTP)	25, 77
PTSD Residential Rehab (PRRP)	26, 88
Substance Abuse Residential Rehab Treatment (SARRT)	27, 86
Homeless Chronic Ment Ill Comp Work Therapy/Trans. Residence (HCMI CWT/TR)	28, 29, 38, 39
Residential Rehabilitaion Treatment (excluding PTSD and SA that are included in above programs)	37, 85, 87

#### Bed Sections

Other

Compensation and Pension Exams Program

CPT codes 99450,  
99455-6

Respite Care

Bed Section 83

Section V, VA Workload Data Manipulations, fully documents how the bed care utilization is captured and counted.

***General Description of Modeling Methodology for Special VA Programs***

Because the programs included in the Special VA Program analysis do not have credible private sector benchmarks, it was determined that projections based on VA experience are more likely to accurately project future VA experience than if based on the private sector mental health experience. Fiscal Year 2002 experience was used to develop the Base Rates and other adjustments described below.

Except as specifically described, each of the program models followed the same general procedure described below. This procedure:

- a) starts with a Base Rate derived from FY 2002 VA experience, described as utilization rates per 1,000 enrolled veterans (utilization/1000),
- b) adjusted by a Priority Level/Enrollee Type factor,
- c) adjusted by a birth year Cohort factor, if appropriate,
- d) adjusted by an Age/Gender factor,
- e) adjusted by a Regional Relativity factor, which varies by VISN.

**Description of development of each factor**

***A. Base Rates***

The starting VA experience used was the FY 2002 baseline data for enrolled veterans. Workload for patients that were not enrolled veterans was excluded. The total utilization count and member months of exposure were captured and used to express the raw rate of utilization per 1,000 enrollees, consistent with the structure of the VA Enrollee Health Care Projection Model. For special VA programs based on bed section care, utilization is in terms of bed days per 1,000

enrolled veterans. For Outpatient and Other programs, it is a measure of clinic stops per 1,000 enrolled veterans.

The Base Rate was not simply set equal to the raw average utilization rate for the entire population of enrolled veterans. The Base Rate is the starting rate that, in conjunction with the adjustment factors, develops total utilization that equals the raw utilization rate for FY 2002. It can be interpreted as representing the average utilization rate for hypothetical enrollees that have 1.00 as their Priority Level/Enrollee Type factor, their Age/Gender factor, their Cohort factor and their Regional Relativity factor. For the population in total, these base rates multiplied by the respective adjustment factors will produce modeled utilization that matches the actual FY 2002 utilization. Thus, the Base Rate used in the model is developed as a near-last step using the following formula:

$$\text{Base Rate} = \frac{\text{Raw Average Utilization Rate}}{\text{Composite Impact of All of the Adjustment Factors}}$$

*B. Priority Level/Enrollee Type Factors:*

The use of these mental health programs varies significantly for certain Priority Levels and Enrollee Types. In particular, these special programs are often used much more frequently by veterans in Priority Levels 1a or 4. Also, Enrollee Pres tend to have a higher rate of use. To develop these factors, the following steps were followed:

1. Enrollees were sorted into two Enrollee Types— Enrollee Pre and Enrollee Post.
2. Enrollee Pres and Enrollee Posts were then sorted into Priority Levels 1a, 1b, 2, 3, 4, 5, 6, 7a, and 7c.
3. A subset of the total utilization, for male enrollees ages 40 to 79, was used for the development of the Priority Level/Enrollee Type factors. Male veterans under age 40 and over age 79 and all female age bands frequently had low enrollment, and had highly variable rates of use. Since these special programs often have very low utilization, including these low enrollment Age/Gender categories could possibly skew the rate of use inappropriately. Still, 77% of the total FY 2002 enrollment was included in the male ages 40-79 categories, therefore, it was very credible data.

4. For each of the 18 Priority Level/Enrollee Type categories, experience was summarized by 5-year age band, showing average enrollment, unique users, total utilization, and raw utilization rate per 1,000 enrollees.
5. The experience utilization rates for each of the 18 Priority Level/Enrollee Type categories was aggregated using a composite of the age-specific experience utilization rates, but weighted for the same age mix. The age mix used was the age mix of the entire male enrolled population, ages 40 to 79. This created an age/gender adjusted utilization rate for each of the 18 categories.
6. A normalized average of the 18 rates was developed by weighting each factor by its exposure as a percent of the total population.
7. Each Priority Level/Enrollee Type factor was developed as each category's rate per 1,000 divided by the overall normalized rate per 1,000.
8. For certain low volume, not fully credible categories, the results were adjusted for reasonableness, based on actuarial judgment. Adjustments were made to make the sequence of factors more reasonable (for example, since Priority Level 2 enrollees are assumed to have greater disabilities than Priority Level 3 enrollees, and lesser disabilities than Priority Level 1 enrollees, the Priority Level 2 factor should be between that of Priority Levels 1 and 3. Also, adjustments may have been made to better model the actual utilization demonstrated in FY 2002, the experience period. Programs for which at least one judgmental change was made to Priority Level/Enrollee Type factor table were:
  - i. Methadone Treatment,
  - ii. Work Therapy,
  - iii. HCMC CWT/TR,
  - iv. STAR I II III, and
  - v. PRRTF.

### *C. Birth Year Cohort Factors:*

Using the Priority Level/Enrollee Type factors developed as described in *B* (above), *initial* Age/Gender factors were developed by removing the influence of Priority Level and Enrollee Type on the experience of each Age/Gender category. A utilization rate normalized to an average Priority Level/Enrollee Type for each Age/Gender category is developed by dividing the preliminary utilization rate by the weighted average Priority Level/Enrollee Type factor developed separately for each category.

It is presumed that certain programs have different utilization levels based on the veterans participation in either the Vietnam or Gulf wars, or other factors related to birth year. For example, use of Methadone Treatment program seems to be more highly correlated with males born between the mid 1940's and the early 1960's. Cohort factors were investigated by comparing the normalized utilization rate by age and gender to normal commercial Age/Gender curves for mental health services. Each program's relative experience by age and gender was compared to the Milliman USA *Health Cost Guidelines*™ Age/Gender factors. Although factors for these particular programs do not exist, factors for similar mental health categories were chosen. If the actual VA experience for Age/Gender categories differed materially from a reasonable or typical Age/Gender pattern, was credible, and could not be explained by other influences, a birth year cohort effect was assumed for that cohort. Birth year cohorts (defined by attained age as of FY 2002) were generally assumed to be ages 30-34 (Gulf-era veterans) and 50-59 (Vietnam-era veterans), with surrounding age groups considered.

Of the mental health programs, only two (the Post-Traumatic Stress Disorder Program and Methadone Treatment Program) were determined to merit cohort factors, although all were considered. The cohort adjustments for these two programs were significant as demonstrated below:

Birth Year Cohort Factor (if Cohort factor is other than 1.00)						
Program	Male Age/Gender Category					
	30-34	35-39	40-44	45-49	50-54	55-59
Methadone Treatment			2.00	3.25	3.00	2.00
Post-traumatic stress disorder	2.50	2.00			7.50	5.00

Compensation and Pension Exams had a noticeable and credible increase in utilization in ages that correlated with Vietnam-era veterans. However, this was assumed to be related to their ages (50-59), since pre-retirement planning would intensify at these ages. Therefore, the utilization is reflected in the Age/Gender factors.

#### *D. Age/Gender Factors:*

Initial Age/Gender factors were developed as described in the beginning of section *C: Birth Year Cohort Factors* (above). The final Age/Gender factors were obtained by first removing the impact of the cohort factors from the initial factors (i.e., by dividing the initial Age/Gender factors by the Cohort factors) for Methadone Treatment and PTSD programs. In many instances, these adjusted factors were based on very small membership and utilization, and were not credible. Adjustments were made to create reasonable Age/Gender factor progressions. Often, the individual female factors were not credible, and too volatile. In these cases, the female factors were set to a percentage of the male factors for all ages. Also, the very low ages showed high volatility due to low volume enrollment and workload. These were also smoothed.

<b><u>Outpatient Mental Health VA Programs</u></b>	<b><u>Reason for Adjustment</u></b>
Day Treatment	Combined <24 with 25-29 to smooth. Female rates were not credible, and were set to be a ratio of male factors. The ratio was based on the weighted average of female to male utilization for ages 30-59, weighted by the female age distribution (which has credible volume in these age categories).
Homeless	Female factors were set to be a ratio of the similar age male factor, in the same manner as described for Day Treatment.
Methadone Treatment	Female factors were set to be a ratio of the similar age male factor, in the same manner as described for Day Treatment.
Mental Health Intensive Case Management (MHICM)	Female factors were set to be a ratio of the similar age male factor, in the same manner as described for Day Treatment. Also, combined <24 with 25-29 ages to smooth.
Work Therapy	Female factors were set to be a ratio of the similar age male factor, in the same manner as described for Day Treatment.
Community Mental Health Residential Care	Female factors were set to be a ratio of the similar age male factor, in the same manner as described for Day Treatment, except only age 40-54 were used to weight the female to male ratio. Also, combined <24 with 25-29 and 30-34 ages to smooth

<b><u>Special VA Program Bed Section Care</u></b>	<b><u>Reason for Adjustment</u></b>
Blind Rehab (VA Model)	See discussion of Blind Rehab model below.
Spinal Cord Injury (VA Model)	See discussion of Spinal Cord Injury model below.
Sustained Treatment and Rehab (STAR I II III)	Female factors were set to be a ratio of the similar age male factor, in the same manner as described for Day Treatment, except only ages 40-49 were used to weight the female to male ratio. Also, combined ages <24 with 25-29 and 30-34 to smooth, plus combined ages 45-54 ages to smooth.
Psychiatric Residential Rehab Treatment Program (PRRTP)	Female factors were set to be a ratio of the similar age male factor, in the same manner as described for Day Treatment, except only age 35-49 were used to weight the female to male ratio. Also, combined <24 with 25-29 and 30-34 ages to smooth, plus smoothed ages 35-44 as well.
PTSD Residential Rehab (PRRP)	Female rates not credible, and were set to be a ratio of male factors. The ratio was based on the weighted average of female to male utilization for ages 35-54, weighted by the female age distribution (which has credible volume in these age categories).
Substance Abuse Residential Rehab Treatment (SARRT)	Female factors were set to be a ratio of the similar age male factor, in the same manner as described for Day Treatment. Also, combined <24 with 25-29 ages to smooth.
Homeless Chronic Ment Ill Comp Work Therapy/Trans. Residence (HCMC CWT/TR)	Female factors were set to be a ratio of the similar age male factor, in the same manner as described for Day Treatment, except only age 40-49 were used to weight the female to male ratio.
Residential Rehab Treatment (excluding PTSD and SA that are included in above programs)	Female factors were set to be a ratio of the similar age male factor, in the same manner as described for Day Treatment. Also, combined <24 with 25-29 ages to smooth.
<b><u>Other</u></b>	<b><u>Reason for Adjustment</u></b>
Compensation and Pension Exams Program	No adjustments were made.

### *E. Regional Relativity Factors*

The aggregate impact of the Priority Level/Enrollee Type, Cohort, and Age/Gender factors was determined for each VISN based on its own enrollee distribution. This aggregate factor was then backed out from each VISN's utilization rate giving a utilization rate normalized to reflect a national average Age/Gender, Priority Level and Enrollee Type. The VISN having the greatest adjusted utilization rate is arbitrarily designated as having a Regional Relativity factor of 1.0. The Regional Relativity factor for the remaining VISNs is calculated as the ratio of the adjusted VISN utilization rate to the greatest adjusted VISN utilization rate. This does not imply that the VISN with a factor of 1.0 is considered to offer "best practice" within that category of care. Nor does it imply that for strategic planning purposes, the Regional Relativity factor cannot be greater than 1.0. However, defining the Regional Relativity in this way enables the factor to be used in a fashion similar to the use of Reliance factors. That is, the regional relativities reflect a complex combination of supply and demand, as a result of variations within VA and variations in non-VA community support programs.

### **Special VA Program Projections Based on VA Models**

The general modeling technique described above could be used for the following two programs: Blind Rehab and Spinal Cord Injury (SCI). However, CACI/Milliman was contracted by VA to incorporate these programs into the VA Enrollee Health Care Projection Model using VA-developed projection methodologies. The primary difference between the VA-developed methodologies and the technique described above is in the number of projection parameters. The above projection models vary by Age/Gender, Priority Level/Enrollee Type, birth year Cohort, as well as region. The prescribed models for Blind Rehab and SCI do not use Age/Gender, Priority Level/Enrollee Type, or Cohort to develop their projections. Some categories, such as Priority Level 4 enrollees, have significantly higher utilization than the other Priority Level enrollees for these two programs. For example, to the extent that the proportion of Priority Level 4 enrollees changes over time, the VA-developed projections are unable to capture variations in utilization due to those changes.

#### *Blind Rehab Program*

The Blind Rehab model is based upon the methodology in the "Final Blind Rehab Demand Projections" model as provided by VA. The methodology VA used to develop this model is



included as Exhibit IV-1. In summary, to produce projected bed days of Blind Rehab care, the VA-provided model:

- projects the legally blind veteran population for each fiscal year and VISN;
- multiplies by the projected market shares (based on overall enrollment) for each fiscal year and VISN; and
- multiplies by the rate of bed days per Blind Rehab patient (based on FY 2001 VA workload), which vary by VISN.

This VA Blind Rehab model was incorporated into the VA Enrollee Health Care Projection Model by expressing the projected utilization as the product of:

- the incidence rate of blindness in the enrolled veteran population;
- the base utilization rate for blind patients; and
- the regional relativity factor for Blind Rehab utilization.

The incidence rate is set equal to the ratio of legally blind veterans to total veterans, and varies by VISN and Fiscal Year. The base utilization rate for Blind Rehab patients is set equal to the greatest VISN utilization rate. The regional relativity factor for each VISN is the ratio of that VISNs utilization rate to the base utilization rate.

### *Spinal Cord Injury and Disorders Program*

The Spinal Cord Injury model is based upon the methodology in the “Final SCI Demand Projections” model as provided by VA. The methodology VA used in the development of this model is included as Exhibit IV-2. In summary, to produce projected bed days of SCI care, the VA-provided model:

- starts with the 16,665 SCI patients treated in FY 2001;
- projects future fiscal year SCI patients by applying an annual growth rate of 1.28%;
- distributes the projected SCI patients to VISNs using the relative levels of Priority Level 1 through Priority Level 4 enrollment projected for each VISN; and
- multiplies by the rate of bed days per SCI patient (based on FY 2001 VA workload).

This VA SCI model was incorporated into the VA Enrollee Health Care Projection Model, by expressing the projected utilization as the product of:

- the incidence rate of SCI in the enrolled veteran population;
- the base utilization rate for SCI patients; and
- the regional relativity factor for SCI utilization.

The incidence rate is set equal to the ratio of SCI patients to total veterans, and varies by Fiscal Year. The incidence rate for Priority Levels 5 through 8c veterans is set to 0. The base utilization rate for SCI patients is set equal to the greatest VISN utilization rate. The regional relativity factor for each VISN is the ratio of that VISNs utilization rate to the base utilization rate for SCI.

### **Respite and VA Program Equipment and Services**

The Special VA Program analysis originally was focused on mental health related services and did not include Respite care. In addition, the need to model VA Program Equipment and Services using VA experience data became apparent during the Prosthetics workload analysis. Consequently, utilization rates were developed for Respite and VA Program Equipment and Services using historical FY 2002 VA workload experience data in a separate analysis. Fiscal year 2002 workload data was obtained from VA and national bed days were summarized by fiscal year, bed section, Priority Level, age band and gender for Respite bed care. VA Program Equipment and Services unit counts were also summarized into the same demographic cohorts. The total days or units and the FY 2002 enrollee exposures were used to calculate annual utilization rates per thousand.

These utilization rates were smoothed across age bands, gender and Priority Levels. This was accomplished by assuming age and gender distinctions were credible for all Priority Levels combined and Priority Level distinctions were credible for all age bands combined. Relative age factors were developed for all Priority Levels combined and relative morbidity factors by Priority Level were developed for all ages combined. For VA Program Equipment and Services, the data was credible enough to support relative morbidity factors that vary by Priority Level and Enrollee Type. For Respite care it was apparent that overall differences in utilization rates exist for each gender, but the female experience was not credible for developing relative age and morbidity factors. In this case, relative morbidity factors and age factors for the credible male

enrollee population were used to develop smoothed utilization rates for female enrollees. The overall difference in the utilization rates between male and female enrollees was maintained. The Respite bed care experience also had inconsistent age factors in the younger age bands that were developed from credible and non-credible data. Consequently, the age bands for ages under 50 were combined to develop a single age factor for all of the combined age bands.

These services were incorporated into the utilization and projection model and the resulting FY 2002 bed days for these services was compared to the original bed days from the FY 2002 workload data. Actual-to-Expected ratios were developed for each service. These factors were incorporated into the modeling process and represent experience adjustments that enhance the model's prediction capabilities. The national Actual-to-Expected ratio for Respite Care was 0.893. Due to the high volume of VA Program Equipment and Service data, the Actual-to-Expected ratio for it was very close to 1.00. As a result, the starting baseline utilization assumption for this service was adjusted slightly such that a 1.00 Actual-to-Expected ratio would result nationally, across all Age Bands, Priority Levels, and Enrollee Types. Unit costs (per diems or cost per unit) were developed for each service as described in Section VII- VA Unit Costs.

## Exhibit IV-1

### CARES Phase II - Blind Rehab Special Disabilities Population Demand Model

This workbook presents a model for calculating blind rehab bed level projections for FY2012 and FY2022. The model uses FY2001 utilization rates and blind rehab enrollee projects by VISN. In Exhibit - 3 the impact of adding two blind rehab centers in VISN 16 and VISN 22 is calculated.

The workbook contains six tabs not including this explanation: two trend charts one of the general veteran population and another of legally blind veterans, two spreadsheets that calculate projected blind rehab bed levels, and two supporting spreadsheets, one for computing market share by VISN and FY, and another for applying those market share percentages to the blind veteran population to derive enrollee estimates. Tabs are referred to as Exhibits in this document.

#### Trend Chart of Total Veterans Population & Enrollee Projections FY2001 - FY2022 (Exhibit - 1a)

This combination area/line chart shows trends of national population, enrollee and market share projections for all veterans from FY2001 to FY2022.

##### - Data sources:

- Estimates for the veteran population are from VetPop2001Adj (VetPop2001 Adjusted for Census 2000).
- Total enrollee projections are CACI/Milliman, enrollment estimates based on VetPop2001Adj and adjusted for enrollment policy
- Market share is a percentage calculated by dividing enrollment projections by population projections.

#### Trend Chart of the Legally Blind Veteran Population & Enrollee Projections FY2001 - FY2022 (Exhibit - 1b)

This combination area/line chart shows trends of national population, enrollee and market share projections for legally blind veterans from FY2001 to FY2022.

##### - Data sources:

- Estimates for the legally blind veteran population from Bill Delaune, CARES SUMMARY: Legally Blind Veterans, CD 11/11/2002.
- Market share is a percentage calculated by dividing total projected enrolled veterans from CARES CACI/Milliman, enrollment estimates
- Blind Rehab enrollees are projected by multiplying market share times blind veteran population estimates.

#### Projections with Baseline Utilization (Exhibit - 2)

This spreadsheet calculates projected bed levels by VISN for FY2012 and FY2022. The percent change from the base year (FY2001) to each projected year is calculated, mandated bed levels are displayed and the gap between available and projected beds is computed.

##### - Column contents

- VISN [A] - The VISN Number
- Blind Rehab Base Year FY2001
  - Actual Admits [B] - Extracted from CACI/Milliman's SAS dataset "baseline\_database" the sum of admit\_hsc util\_hsc where hsc = '10'
  - Actual Bed Days [C] - Extracted from CACI/Milliman's SAS dataset "baseline\_database" the sum of util\_hsc where hsc = '10' by
  - Estimated Beds [D] -  $([C] / 365 / 0.85)$
  - Estimated Legally Blind Enrollees [E] - values transferred from Exhibit - 4, enrollment section column [B].
  - Bed Days Per 1,000 Enrollees [F] -  $([C] / ([E] / 1000))$
- Projected Legally Blind Enrollees
  - FY12 [G] - are values transferred from Exhibit - 4, enrollment section column [M].
  - FY22 [H] - are values transferred from Exhibit - 4, enrollment section column [W].
- Bed Days Projected
  - FY12 [I] -  $([F] * ([G] / 1000))$
  - FY22 [J] -  $([F] * ([H] / 1000))$
- Bed Levels Projected
  - FY12 [K] -  $([I] / 365 / 0.85)$
  - FY22 [L] -  $([J] / 365 / 0.85)$
- % Change from Base Year to
  - FY12 [M] -  $(([I] - [C]) / [C])$
  - FY22 [N] -  $(([J] - [C]) / [C])$
- Mandated Levels [O] - current bed levels provided by the director of Blind Rehabilitation Service
- Gap: Available vs. Projected beds
  - 2001 - 2012 [P] - [K]-[O]
  - 2001 - 2022 [Q] - [L]-[O]

## Exhibit IV-1 (cont.)

### Adding Centers in VISN 16 and 22 (Exhibit - 3)

This exhibit is identical to Exhibit 2, except a utilization rate of 2,839 Bed Days per 1,000 enrollees was substituted in VISN 16 and 22. This rate represents the average rate for VISNs with centers. Using the new rate increased projected bed levels from 20 to 36 in FY2012 and 21 to 37 in FY2022 in VISN 16, and from 17 to 24 in FY2012 and from 16 to 23 in FY2022 in VISN 22, as compared to Exhibit - 2.

#### - Column contents

- All columns are identical to Exhibit - 2
- The formula in the "VISN 16" row and "Bed Days Per 1,000 Enrollees" column as copied from Exhibit - 2 was replaced by the value 2,839. All columns to the right that use this column are therefore calculated based on this new value.

### Population and Enrollment Projections (Exhibit - 4)

This spreadsheet contains two sections: Blind Population Projections and Blind Enrollment Projections. The numbers are arrayed by VISN and FY. Blind Population Projections were extracted from Bill Delaune's CARES SUMMARY: Legally Blind Veterans, CD 11/11/2002, and Blind Enrollment Projections are computed by multiplying population counts times market share percent from Exhibit - 5.

#### - Column contents

- VISN [A] - The VISN Number
- Population section: FY2001 - FY2022, columns [B]-[W] are the numbers reported on the CARES SUMMARY: Legally Blind Veterans, CD.
- Enrollee section: FY2001 - FY2022, columns [B]-[W] are the product of population times market share from the corresponding (VISN, FY) cell in Exhibit - 5.

### Market Share by VISN Calculation (Exhibit - 5)

This spreadsheet contains three sections: Total Veteran Population Projections from VetPop2001Adj (adjusted for Census 2000), Total Enrolled Veterans Estimates from CACI/Milliman, enrollment estimates based on VetPop2001Adj and adjusted for enrollment policy changes from County\_fyend\_census2000 SAS Dataset and Market Share. The numbers in all sections are arrayed by VISN and FY. Market share is computed as a percent by dividing enrollees by population.

#### - Column contents

- VISN [A] - The VISN Number
- Population section: FY2001 - FY2022, columns [B]-[W] are the total Veteran Population Estimates from VetPop2001Adj.
- Enrollee section: FY2001 - FY2022, columns [B]-[W] are Total Enrolled Veterans Estimates extracted from CACI/Milliman, enrollment estimates based on VetPop2001Adj and adjusted for enrollment policy changes from County\_fyend\_census2000 SAS Dataset.
- Market Share section: FY2001 - FY2022, columns [B]-[W] are (enrollees/population).

## Exhibit IV-2

### CARES Phase II - Acute SCI&D Special Disabilities Population Demand Model

This workbook presents a model for calculating SCI bed level projections for FY2012 and FY2022. The model excludes LTC and uses baseline FY2001 acute utilization rates and SCI "user" projections by VISN.

The workbook contains eight tabs: an explanation, a trend chart of SCI veterans, three spreadsheets that calculate projected acute SCI bed levels, a supporting spreadsheet for applying VISN percent of total priority 1-4 enrollees to the SCI veteran total "user" estimates, a spreadsheet that presents VISN percentage of total enrollees, and a trend chart of Priority 1-4 National Veteran Population & Enrollee Projections FY2001 - FY202. Tabs are referred to as Exhibits in this document.

#### Trend Chart of SCI Veteran Population & "User" Projections FY2001 - FY2022 (Exhibit - 1)

This combination area/line chart shows trends of national population, users, and market share projections for SCI veterans from FY2001 to FY2022.

##### - Data sources:

- Estimates for the SCI veteran population prevalence are from Lasfarques, Custis, Morrone, Carswell, & Nguyen (1995) (SCI prevalence of 1,634 per million veterans) plus 25% of veterans with multiple sclerosis based on state-by-state latitude adjusted VISN multiple sclerosis prevalence rates based on Bandolier (2001). Myhr et al.,'s (2001) finding that following a fifteen-year course of multiple sclerosis, only 75.8% could manage without wheelchair use is the basis for the 25% of veterans with multiple sclerosis also receiving spinal cord injury diagnoses of tetraplegia or paraplegia.
- Actual FY2001 SCI&D market share was calculated by matching 22,334 living veterans in the Allocation Resource Center listing of veterans with SCI since 1988 by SSN to 18,008 records in the enrollment file. 16,665 of these veterans with SCI&D in the enrollment file had verified or pending enrollments in FY2001. ZIP Codes from the National Patient Care Database were mapped back to VISNs using the ZIP\_VISN Field of File ZIP04\_2002.DBF of the VA Planning Systems Support Group. Market share is a percentage (35%) calculated by dividing current enrollees by the SCI population described above (16,665/47,172) and incrementally increasing market
- SCI users are projected by multiplying VISN percent of priority 1-4 enrollees times total SCI "user" estimates.

#### Projections with Baseline FY2001 Utilization excluding SCI LTC in VISNs 1, 3, and 6 (Exhibit - 2a)

This spreadsheet calculates projected bed levels by VISN for FY2012 and FY2022. The percent change from the base year (FY2001) to each projected year is calculated, mandated bed levels from VHA Directive 2000-022, P.L. 107-135, and P.L. 104-262 are displayed, and the gap between projected and available beds is computed.

##### - Column contents

- VISN [A] - The VISN Number
- SCI Base Year FY01
  - Actual Admits [B] - Extracted from CACI/Milliman's SAS dataset "baseline\_database" the sum of admit\_hsc util\_hsc where hsc = '11' by VISN minus 115 LTC admissions for VISN 1, 113 LTC admissions for VISN 3, and 69 LTC admissions in VISN 6.
  - Actual Bed Days [C] - Extracted from CACI/Milliman's SAS dataset "baseline\_database" the sum of util\_hsc where hsc = '11' by VISN. FY2001 SCI LTC bed days of care have been subtracted for VISNs 1 (6,179), 3 (4,192), and 6 (20,064).
  - Estimated Beds [D] -  $([C] / 365 / 0.85)$
  - Estimated SCI "Users" [E] - are values transferred from Exhibit - 3, "Users" section, column [B].
  - Bed Days Per 1,000 Enrollees [F] -  $([C] / ([E] / 1000))$
- Projected SCI "Users"
  - FY12 [G] - are values transferred from Exhibit - 3, "Users" section column [M].
  - FY22 [H] - are values transferred from Exhibit - 3, "Users" section column [W].
- Bed Days Projected
  - FY12 [I] -  $([F] * ([G] / 1000))$
  - FY22 [J] -  $([F] * ([H] / 1000))$
- Bed Levels Projected
  - FY12 [K] -  $([I] / 365 / 0.85)$
  - FY22 [L] -  $([J] / 365 / 0.85)$
- % Change from Base Year to
  - FY12 [M] -  $(([I] - [C]) / [C])$
  - FY22 [N] -  $(([J] - [C]) / [C])$
- Mandated Levels [O] - acute staffed SCI&D bed levels mandated by public law 107-135, public law 104-262, and VHA Directive 2000-022.
- Mandated Levels [P] - acute available SCI&D bed levels mandated by public law 107-135, public law 104-262, and VHA Directive 2000-022.
- Gap: Available vs. Projected beds
  - 2001 - 2012 [Q] - [K]-[P]
  - 2001 - 2022 [R] - [L]-[P]

## Exhibit IV-2 (cont.)

### Projections with Current Utilization & Mean Substitution for all VISNs without SCI Centers (Exhibit - 2b)

This spreadsheet calculates projected bed levels by VISN for FY2012 and FY2022. The percent change from the base year (FY2001) to each projected year is calculated, mandated bed levels are displayed and the gap between projected and available beds is computed. A utilization rate of 16,215 Bed Days per 1,000 "users", the average rate for VISNs with centers, was substituted in all VISNs without SCI Centers.

#### - Column contents

- VISN [A] - The VISN Number
- SCI Base Year FY01
  - Actual Admits [B] - Extracted from CACI/Milliman's SAS dataset "baseline\_database" the sum of admit\_hsc util\_hsc where hsc = '11' by VISN minus 115 LTC admissions for VISN 1, 113 LTC admissions for VISN 3, and 69 LTC admissions in VISN 6.
  - Actual Bed Days [C] - Extracted from CACI/Milliman's SAS dataset "baseline\_database" the sum of util\_hsc where hsc = '11' by
  - Estimated Beds [D] -  $([C] / 365 / 0.85)$
  - Estimated SCI "Users" [E] - are values transferred from Exhibit - 3, "Users" section, column [B].
  - Bed Days Per 1,000 Enrollees [F] -  $([C] / ([E] / 1000))$  - 16,215 bed days per 1,000 Enrollees (average for VISNs with SCI Centers) has been substituted for all VISNs without SCI Centers (2, 4, 5, 11, 19, and 23).
- Projected SCI "Users"
  - FY12 [G] - are values transferred from Exhibit - 3, "Users" section column [M].
  - FY22 [H] - are values transferred from Exhibit - 3, "Users" section column [W].
- Bed Days Projected
  - FY12 [I] -  $([F] * ([G] / 1000))$
  - FY22 [J] -  $([F] * ([H] / 1000))$
- Bed Levels Projected
  - FY12 [K] -  $([I] / 365 / 0.85)$
  - FY22 [L] -  $([J] / 365 / 0.85)$
- % Change from Base Year to
  - FY12 [M] -  $(([I] - [C]) / [C])$
  - FY22 [N] -  $(([J] - [C]) / [C])$
- Mandated Levels [O] - acute staffed SCI&D bed levels mandated by public law 107-135, public law 104-262, and VHA Directive 2000-022.
- Mandated Levels [P] - acute available SCI&D bed levels mandated by public law 107-135, public law 104-262, and VHA Directive 2000-022.
- Gap: Available vs. Projected beds
  - 2001 - 2012 [Q] - [K]-[P]
  - 2001 - 2022 [R] - [L]-[P]

## Exhibit IV-2 (cont.)

### Projections with Baseline FY2001 Utilization & Mean Substitution for all VISNs (Exhibit - 2c)

This spreadsheet calculates projected bed levels by VISN for FY2012 and FY2022. The percent change from the base year (FY2001) to each projected year is calculated, mandated bed levels are displayed and the gap between projected and available beds is computed. A utilization rate of 16,215 Bed Days per 1,000 "users", the average rate for VISNs with centers, was substituted in all VISNs.

#### - Column contents

- VISN [A] - The VISN Number
- SCI Base Year FY01
  - Actual Admits [B] - Extracted from CACI/Milliman's SAS dataset "baseline\_database" the sum of admit\_hsc util\_hsc where hsc = '11' by VISN minus 115 LTC admissions for VISN 1, 113 LTC admissions for VISN 3, and 69 LTC admissions in VISN 6.
  - Actual Bed Days [C] - Extracted from CACI/Milliman's SAS dataset "baseline\_database" the sum of util\_hsc where hsc = '11' by VISN. FY2001 SCI LTC bed days of care have been subtracted for VISNs 1 (6,179), 3 (4,192), and 6 (20,064).
  - Estimated Beds [D] -  $([C] / 365 / 0.85)$
  - Estimated SCI "Users" [E] - are values transferred from Exhibit - 3, "Users" section, column [B].
  - Bed Days Per 1,000 Enrollees [F] -  $([C] / ([E] / 1000))$  - 16,215 bed days per 1,000 Enrollees (average for VISNs with SCI Centers) has been substituted for all VISNs.
- Projected SCI "Users"
  - FY12 [G] - are values transferred from Exhibit - 3, "Users" section column [M].
  - FY22 [H] - are values transferred from Exhibit - 3, "Users" section column [W].
- Bed Days Projected
  - FY12 [I] -  $([F] * ([G] / 1000))$
  - FY22 [J] -  $([F] * ([H] / 1000))$
- Bed Levels Projected
  - FY12 [K] -  $([I] / 365 / 0.85)$
  - FY22 [L] -  $([J] / 365 / 0.85)$
- % Change from Base Year to
  - FY12 [M] -  $(([I] - [C]) / [C])$
  - FY22 [N] -  $(([J] - [C]) / [C])$
- Mandated Levels [O] - acute staffed SCI&D bed levels mandated by public law 107-135, public law 104-262, and VHA Directive 2000-022.
- Mandated Levels [P] - acute available SCI&D bed levels mandated by public law 107-135, public law 104-262, and VHA Directive 2000-022.
- Gap: Available vs. Projected beds
  - 2001 - 2012 [Q] - [K]-[P]
  - 2001 - 2022 [R] - [L]-[P]



## Exhibit IV-2 (cont.)

### Population and "User" Projections (Exhibit - 3)

This spreadsheet contains three sections: SCI Population, national "Users" total and "Users" by VISN Projections. The numbers are arrayed by VISN and FY. SCI Population Projections were extracted from Lasfarques, Custis, Morrone, Carswell, & Nguyen (1995) (SCI prevalence of 1,634 per million veterans) plus 25% of veterans with multiple sclerosis based on state-by-state latitude adjusted VISN multiple sclerosis prevalence rates based on Bandler (2001). Myhr et al.'s (2001) finding that following a fifteen-year course of multiple sclerosis, only 75.8% could manage without wheelchair use is the basis for the 25% of veterans with multiple sclerosis also receiving spinal cord injury diagnoses of tetraplegia or paraplegia. SCI "Users" at the national level are based on annual growth of 1.28% compounded annually starting with 16,665 in FY2001. SCI "User" by VISN section is computed by multiplying VISN percent of priority 1-4 enrollees times the national total SCI "User" estimates.

#### - Column contents

- VISN [A] - The VISN Number
- Population section: FY2001 - FY2022, columns [B]-[W] are the numbers calculated from Lasfarques, Custis, Morrone, Carswell, & Nguyen (1995) (SCI prevalence of 1,634 per million veterans) plus 25% of veterans with multiple sclerosis based on state-by-state latitude adjusted VISN-specific multiple sclerosis prevalence rates based on Bandler (2001). Myhr et al.'s (2001) finding that following a fifteen-year course of multiple sclerosis, only 75.8% could manage without wheelchair use is the basis for the 25% of veterans with multiple sclerosis also receiving spinal cord injury diagnoses of tetraplegia or paraplegia.
- SCI "Users" Projections national section: FY2001 - FY2022, columns [B]-[W]: Actual FY2001 SCI&D market share was calculated by matching 22,334 living veterans in the Allocation Resource Center listing of veterans with SCI since 1988 by SSN to 18,008 records in the enrollment file. 16,665 of these veterans with SCI&D in the enrollment file had verified or pending enrollments in FY2001. ZIP Codes from the National Patient Care Database were mapped back to VISNs using the ZIP\_VISN Field of File ZIP04\_2002.DBF of the VA Planning Systems Support Group. Beginning in FY2003 through FY2022 the estimate is based on annual growth of 1.28% (this rate is consistent with the SCI program's recommendation of 1.5% applied annually without compounding) compounded annually starting with 16,665 in FY2001.
- SCI "Users" Projections by VISN section: FY2001 column [B] is copied from the enrollee section above, FY2002 - FY2022 columns [C]-[W]: are computed multiplying the VISN's percent of total enrollees, obtained from Exhibit 4, times the national "users" estimates. Market share is a percentage (35%) in FY2001 is calculated by dividing current "users" by the SCI population described above (16,665/47,172) and increases yearly to 69% in FY2022.

### Market Share and Percent of National Enrollees Calculations by VISN by Fiscal Year (Exhibit - 4)

Estimates from CACI/Milliman, enrollment estimates based on VetPop2001Adj and adjusted for enrollment policy changes from County\_fyend\_census2000 SAS Dataset for priorities 1-4, Market Share and Percent of total enrollee estimates by VISN. The numbers in all sections are arrayed by VISN and FY. Market share is computed as a percent by dividing enrollees by population. VISN percent is computed by dividing each VISN's enrollee estimate by the national total.

#### - Column contents

- VISN [A] - The VISN Number
- Population section: FY2001 - FY2022, columns [B]-[W] are the total Veteran Population Estimates from VetPop2001Adj for priorities 1 - 4.
- Enrollee section: FY2001 - FY2022, columns [B]-[W] are Total Enrolled Veterans Estimates extracted from CACI/Milliman, enrollment estimates based on VetPop2001Adj and adjusted for enrollment policy changes from County\_fyend\_census2000 SAS Dataset for priorities 1-
- Market Share section: FY2001 - FY2022, columns [B]-[W] are (enrollees/population).
- VISN percent section: FY2001 - FY2022, columns [B]-[W] are (enrollees/total population).

### Trend Chart of Priority 1-4 National Veteran Population & Enrollee Projections FY2001 - FY2022 (Exhibit - 5)

This combination area/line chart shows trends of national population, enrollee and market share projections for all veterans priority 1 - 4 from FY2001 to FY2022.

#### - Data sources:

- Estimates for the veteran population are from VetPop2001Adj (VetPop2001Adjusted for Census 2000) for priority 1-4.
- Total enrollee projections are CACI/Milliman, enrollment estimates based on VetPop2001Adj and adjusted for enrollment policy changes from County\_fyend\_census2000 SAS Dataset, priority 1-4.
- Market share is a percentage calculated by dividing enrollment projections by populations projections.